

REMARKS

Claims 1-8, all the claims pending in the application, stand rejected. Claims 1-3 and 5 are amended. New claims 9-14 are added. Claim 4 is cancelled. Applicants respectfully submit that all of the remaining rejected claims are patentable.

Claim 1 has been amended to specify that the mask blank is being used in “a transfer mask,” based on the description of the original claim 7.

Also, the amended claim 1, “for use with F2 excimer laser light or EUV (extreme ultra violet) light as an exposure light source” is based on the description of page 1, lines 8-11 of the present specification.

In the amended claim 1, “a reference flatness required in lithography using the F2 excimer laser light or the EUV light as the exposure light source” is based on the descriptions of page 1, line 3 from the bottom through page 2, line 2, page 15, lines 11-16 of the present specification, and the original claim 8 (lithography).

In the amended claim 1, “the local machining being carried out by plasma etching, a gas cluster ion beam, or MRF (Magnetorheological Finishing)” is based on the description of the original claim 4 and page 12, lines 19-26 (MRF (MagnetoRheological Finishing)) of the present specification.

In the amended claim 1, “the non-contact polishing step being carried out by float polishing, elastic emission machining (EEM), or hydroplane polishing” is based on the description of the original claim 2 and on the description of page 4, lines 3-4 from the bottom of the present specification.

The amended claim 2 is based on the original claims 1 and 5 and on a part of the added portion of amended claim 1.

New added claim 9 is based on the descriptions of page 23, lines 10-12 from the bottom and page 30, line 10-21 of the present specification.

New added claims 10, 11, 12, 13, and 14 are based on the above-described claims 3, 6, 7, 8, and 9.

Claim Rejections – 35 U.S.C. § 102

Claims 1 and 3-7 are rejected under 35 U.S.C. § 102 as being anticipated by Nakagawa et al (5,494,721). This rejection is traversed for at least the following reasons.

In Section 2 (page 2, last line through page 3, line 2) of the Official Action, the Examiner states in relation to claim 1 of the present application that Nakagawa et al discloses “executing an ion beam etching/local machining to form projection/convex portion under a machining condition depending upon the degree of convexity (col. 9, lines 25-30; col. 14, lines 40-45)”. Applicant submits that this observation is not correct and that the reference does not anticipate the claimed invention.

No Local Machining on Convex Portion

Nakagawa et al discloses in fact that “the abrasion processing and the ion milling or sputter etching method instead of the abrasion method (col. 9, lines 24-30)” are carried out in order that projections on the surface are formed utilizing difference in hardness of crystal phase and glass phase (col. 9, lines 21-24). Thus, Nakagawa et al does not disclose “local machining upon the convex portion,” as set forth in the amended claims 1 and 2.

No Non-Contact Polishing After Local Machining

In Section 2 (page 3, lines 3-5) of the Official Action, the Examiner states in relation to claim 1 of the present application that Nakagawa et al disclose “a polishing step (col. 13, lines 4-11)”.

However, Nakagawa et al does not disclose that “the non-contact polishing step due to float polishing, elastic emission machining (EEM), or hydroplane polishing is carried out for polishing, after the local machining of the flatness control step, the surface of the glass substrate subjected to the local machining,” as expressly required in amended claim 1.

No Flatness As Claimed

Furthermore in relation to the amended claim 1, Nakagawa et al does not disclose that “a flatness of the surface of the glass substrate is controlled to a value not greater than a reference flatness required in lithography using the F2 excimer laser light or the EUV light as the exposure

light source.” More specifically, the F2 excimer laser (fluorine) light has a wavelength of 157 nm, the EUV (extreme ultra violet) light having a wavelength of 13 nm (page 1, lines 8-11 of the instant specification). Thus, each of the F2 excimer laser light and the EUV light belongs to an ultrashort wavelength range. The F2 excimer laser light or the EUV light is used as the exposure light source when the transfer mask produced from the mask blank is used in the transferring step. That is, the F2 excimer laser light or the EUV light is used as the exposure light source in the transferring step of transferring the thin film pattern of the transfer mask onto a semiconductor substrate by lithography (claim 8).

On the basis of the foregoing reasons, claim 1 clearly is patentable over Nakagawa et al.

Claim Rejections – 35 U.S.C. § 103

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakagawa et al (5,494,721) in view of Carr et al (US 5,761,790). This rejection is traversed for at least the following reasons.

Claim 2 is amended to place the claim into independent form. Claim 2 includes the limitations of claim 1, which clearly are distinguished from Nakagawa, for reasons discussed above. Further, the Examiner recognizes that Nakagawa et al does not meet the limitations added by original claim 2. Thus, the Examiner looks to Carr et al for the additional limitations added in claim 2. However, Carr et al does not remedy the deficiencies of claims 1 as noted above.

No Polishing After Machining

In particular, Carr et al does not disclose that “the non-contact polishing step due to float polishing, elastic emission machining (EEM), or hydroplane polishing is carried out for polishing, after the local machining of the flatness control step, the surface of the glass substrate subjected to the local machining” in the amended claims 1 and 2.

Thus, neither Nakagawa et al nor Carr et al disclose “a method of producing a glass substrate for a mask blank, said mask blank being for use in a transfer mask which is for use with F2 excimer laser light or EUV (extreme ultra violet) light as an exposure light source,” and “a

Amendment Under 37 C.F.R. § 1.114(c)
U.S. Application No. 10/809,523

flatness control step of controlling a flatness of the surface of the glass substrate to a value not greater than a reference flatness required in lithography using the F2 excimer laser light or the EUV light as the exposure light source.” .

In the absence of the foregoing teachings, Applicants respectfully submit that the amended claims 1 and 2 are patentable

Dependent Claims

Finally, Applicants submit that remaining claims 3, 5-14 are also patentable because they depend from the patentable claims 1 and 2.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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